

**METHOD AND APPARATUS FOR WORD SYNCHRONIZATION WITH
LARGE CODING DISTANCE AND FAULT TOLERANCE FOR PRML
SYSTEMS**

Abstract of the Disclosure

5 A method and apparatus are provided for word synchronization with
large coding distance and fault tolerance for a partial-response maximum-
likelihood (PRML) data channel in a direct access storage device (DASD). A
Viterbi detector receives equalized PR4 samples including a predefined word
synchronization pattern. The Viterbi detector is a dedicated detector
10 optimized for detecting the predefined word synchronization pattern. The
Viterbi detector includes a two-state Viterbi trellis and a word synchronization
detector for the two-state Viterbi trellis. The predefined word synchronization
pattern includes only even length magnets. The predefined word
synchronization pattern is a repetition code including pairs of ones and pairs
15 of zeros and includes multiple pattern match sequences. The Viterbi
detector is optimized with branches removed from the Viterbi trellis, thus
increasing coding distance. The two-state Viterbi trellis and word
synchronization detector of the Viterbi detector operate on a 2T basis, where
1/T is the sample rate.